

Refine Search

Search Results -

| Terms | Documents |
|---|-----------|
| ("machine specific register" or MSR) near10 (SOC or chip or IC) | 8 |

Database:

- US Pre-Grant Publication Full-Text Database
- US Patents Full-Text Database
- US OCR Full-Text Database
- EPO Abstracts Database
- JPO Abstracts Database
- Derwent World Patents Index
- IBM Technical Disclosure Bulletins

Search:

L1

Refine Search

Recall Text

Clear

Interrupt

Search History

DATE: Thursday, September 28, 2006 [Purge Queries](#) [Printable Copy](#) [Create Case](#)

Set Name Query
side by side

Hit Count Set Name
result set

DB=PGPB; PLUR=YES; OP=OR

L1 ("machine specific register" or MSR) near10 (SOC or chip or IC) 8 L1

END OF SEARCH HISTORY

Refine Search

Search Results -

| Terms | Documents |
|---|-----------|
| ("machine specific register" or MSR) near10 (SOC or chip or IC) | 6 |

Database:

US Pre-Grant Publication Full-Text Database
 US Patents Full-Text Database
 US OCR Full-Text Database
 EPO Abstracts Database
 JPO Abstracts Database
 Derwent World Patents Index
 IBM Technical Disclosure Bulletins

Search:

L3



Refine Search

Recall Text



Clear

Interrupt

Search History

DATE: Thursday, September 28, 2006
 [Purge Queries](#)
 [Printable Copy](#)
 [Create Case](#)

Set Name Query
 side by side

Hit Count Set Name
 result set

DB=EPAB,JPAB,DWPI,TDBD; PLUR=YES; OP=OR

L3 ("machine specific register" or MSR) near10 (SOC or chip or IC)

6

L3

DB=PGPB,USPT,USOC; PLUR=YES; OP=OR

L2 L1 same address

3

L2

L1 ("machine specific register" or MSR) near10 (SOC or chip or IC)

18

L1

END OF SEARCH HISTORY

Refine Search

Search Results -

| Terms | Documents |
|--|-----------|
| (709/230 709/250 709/238 709/253 370/351 370/416 370/463 370/402 712/32 712/33 712/17 712/28 712/208 710/104 710/309 710/105 710/5 710/33 710/20 710/38 710/100 710/305 711/2 711/202 711/220).ccls. | 19259 |

Database:

US Pre-Grant Publication Full-Text Database
 US Patents Full-Text Database
 US OCR Full-Text Database
 EPO Abstracts Database
 JPO Abstracts Database
 Derwent World Patents Index
 IBM Technical Disclosure Bulletins

Search:

L4

Refine Search

Recall Text

Clear

Interrupt

Search History

DATE: Thursday, September 28, 2006
 [Purge Queries](#)
 [Printable Copy](#)
 [Create Case](#)

SetName Query

side by

side

DB=PGPB,USPT,USOC; PLUR=YES; OP=OR

L4 710/104,309,105,5,33,20,38,100,305;709/230,250,238,253;370/351,416,463,402;712/32,33,17,28

DB=EPAB,JPAB,DWPI,TDBD; PLUR=YES; OP=OR

L3 ("machine specific register" or MSR) near10 (SOC or chip or IC)

DB=PGPB,USPT,USOC; PLUR=YES; OP=OR

L2 L1 same address

L1 ("machine specific register" or MSR) near10 (SOC or chip or IC)

END OF SEARCH HISTORY

Refine Search

Search Results -

| Terms | Documents |
|-----------|-----------|
| L4 and L5 | 10 |

Database:

US Pre-Grant Publication Full-Text Database
 US Patents Full-Text Database
 US OCR Full-Text Database
 EPO Abstracts Database
 JPO Abstracts Database
 Derwent World Patents Index
 IBM Technical Disclosure Bulletins

Search:

L6 ▲
▼

Search History

DATE: Thursday, September 28, 2006 [Purge Queries](#) [Printable Copy](#) [Create Case](#)

SetName Query

side by
side

DB=PGPB,USPT,USOC; PLUR=YES; OP=OR

L6 14 and L5

L5 ("machine specific register" or MSR) same (SOC or chip or IC)

L4 710/104,309,105,5,33,20,38,100,305;709/230,250,238,253;370/351,416,463,402;712/32,33,17,28

DB=EPAB,JPAB,DWPI,TDBD; PLUR=YES; OP=OR

L3 ("machine specific register" or MSR) near10 (SOC or chip or IC)

DB=PGPB,USPT,USOC; PLUR=YES; OP=OR

L2 L1 same address

L1 ("machine specific register" or MSR) near10 (SOC or chip or IC)

END OF SEARCH HISTORY

Refine Search

Search Results -

| Terms | Documents |
|--|-----------|
| path same address same ("machine specific register" or MSR) same writ\$3 | 2 |

Database:

US Pre-Grant Publication Full-Text Database
 US Patents Full-Text Database
 US OCR Full-Text Database
 EPO Abstracts Database
 JPO Abstracts Database
 Derwent World Patents Index
 IBM Technical Disclosure Bulletins

Search:

L2



Refine Search

Recall Text



Clear

Interrupt

Search History

DATE: Thursday, September 28, 2006
 [Purge Queries](#)
 [Printable Copy](#)
 [Create Case](#)

| <u>Set</u> <u>Name</u> side by side | <u>Query</u> | <u>Hit</u> <u>Count</u> | <u>Set</u> <u>Name</u> result set |
|---|--|----------------------------|---|
| <i>DB=PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD; PLUR=YES; OP=OR</i> | | | |
| <u>L2</u> | path same address same ("machine specific register" or MSR) same writ\$3 | 2 | <u>L2</u> |
| <u>L1</u> | path same address same ("machine specific register" or MSR) same writ\$3 same port | 0 | <u>L1</u> |

END OF SEARCH HISTORY

EAST - [Untitled1:1]

File View Edit Tools Window Help

Drafts

Pending

Active

L1: (122) ((machine adj1 s

L2: (35) 11 same address

L3: (21) 12 same (command

L4: (3) 13 same process\$3

Failed

Saved

Favorites

Tagged (0)

Search List Browse Queue Clear

DB: USPAT

Default operator: OR

Plurals

Highlight all hit terms initially

BRS form IS&R form Image Text HTML

| | Type | L # | Hits | Search Text | DBs | Time Stamp | Comments | Error Definition | Err |
|---|------|-----|------|---|-------|---------------------|----------|------------------|-----|
| 1 | BRS | L1 | 122 | ((machine adj1 specific adj1 register) or MSR) | USPAT | 2006/09/28 12:23 | | | |
| 2 | BRS | L2 | 35 | 11 same address | USPAT | 2006/09/28 12:24 | | | |
| 3 | BRS | L3 | 21 | 12 same (command or instruction) | USPAT | 2006/09/28 12:24 | | | |
| 4 | BRS | L4 | 3 | 13 same process\$3 | USPAT | 2006/09/28 12:25 | | | |

Start

EAST - [Un...

EAST - [Untitled1:1]

File View Edit Tools Window Help

Drafts

Pending

Active

L1: (122) ((machine adj1 s

L2: (35) 11 same address

L3: (21) 12 same (command

L4: (3) 13 same process\$3

Failed

Saved

Favorites

Tagged (0)

Search List Browse Queue Clear

DB: USPAT

Default operator: OR

13 same process\$3

Plurals

Highlight all hit terms initially

BRS form IS&R form Image Text HTML

| | U | 1 | Document ID | Issue Date | Pages | Title | Current OR | Current XRef | R |
|---|--------------------------|--------------------------|--------------|------------|-------|---|------------|--------------------|---|
| 1 | <input type="checkbox"/> | <input type="checkbox"/> | US 5754805 A | 19980519 | 266 | Instruction in a data processing system utilizing | 712/200 | | |
| 2 | <input type="checkbox"/> | <input type="checkbox"/> | US 5664134 A | 19970902 | 267 | Data processor for performing a comparison | 712/245 | 712/2; 712/205; | |
| 3 | <input type="checkbox"/> | <input type="checkbox"/> | US 5572689 A | 19961105 | 265 | Data processing system and method thereof | 712/200 | | |

Start

EAST - [Un...


[Home](#) | [Login](#) | [Logout](#) | [Access Information](#) | [Alerts](#) |

Welcome United States Patent and Trademark Office

Search Results

[BROWSE](#)[SEARCH](#)[IEEE XPLORE GUIDE](#)

Results for "((register<in>metadata) <and> (chip<in>metadata))<and> (command<in>meta..."

e-mail

Your search matched 2 of 488547 documents.

A maximum of 100 results are displayed, 25 to a page, sorted by **Relevance** in **Descending** order.

» Search Options

[View Session History](#)[New Search](#)

Modify Search

☐ Check to search only within this results setDisplay Format: ☒ Citation ☐ Citation & Abstract

» Key

IEEE JNL IEEE Journal or Magazine

IEE JNL IEE Journal or Magazine

IEEE CNF IEEE Conference Proceeding

IEE CNF IEE Conference Proceeding

IEEE STD IEEE Standard

[view selected items](#) [Select All](#) [Deselect All](#)

- ☐ 1. **A flexible compatible PCI interface for nuclear experiments**
 Saleh, H.; Engels, R.; Reinartz, R.; Reinhart, P.; Rongen, F.;
Nuclear Science, IEEE Transactions on
 Volume 45, Issue 3, Part 1, June 1998 Page(s):849 - 851
 Digital Object Identifier 10.1109/23.682649
[AbstractPlus](#) | Full Text: [PDF](#)(280 KB) IEEE JNL
[Rights and Permissions](#)
- ☐ 2. **An 800-MHz embedded DRAM with a concurrent refresh mode**
 Kiriata, T.; Parries, P.; Hanson, D.R.; Hoki Kim; Golz, J.; Fredeman, G.; Rajee
 Griesemer, J.; Robson, N.; Cestero, A.; Khan, B.A.; Geng Wang; Wordeman, M
Solid-State Circuits, IEEE Journal of
 Volume 40, Issue 6, June 2005 Page(s):1377 - 1387
 Digital Object Identifier 10.1109/JSSC.2005.848019
[AbstractPlus](#) | [References](#) | Full Text: [PDF](#)(1448 KB) IEEE JNL
[Rights and Permissions](#)

 Indexed by
 Inspec

[Help](#) [Contact Us](#) [Privacy &](#)

© Copyright 2006 IEEE -



[Home](#) | [Login](#) | [Logout](#) | [Access Information](#) | [Alerts](#) | [Sitemap](#) | [Help](#)

Welcome United States Patent and Trademark Office

[AbstractPlus](#)

[BROWSE](#)

[SEARCH](#)

[IEEE XPLORE GUIDE](#)

[SUPPORT](#)

[View Search Results](#) | [Previous Article](#) |

[e-mail](#) [printer friendly](#)

Access this document

[Full Text: PDF \(1448 KB\)](#)

Download this citation

Choose [Citation & Abstract](#)

Download [ASCII Text](#)

[Learn More](#)

[Rights and Permissions](#)

[Learn More](#)

An 800-MHz embedded DRAM with a concurrent refresh mode

[Kirihata, T.](#), [Parries, P.](#), [Hanson, D.R.](#), [Hoki Kim Goltz, J.](#), [Fredeman, G.](#), [Rajeevakumar, R.](#), [Griesemer, J.](#), [Robson, N.](#), [Cestero, A.](#), [Khan, B.A.](#), [Geng Wang Wordeman, M.](#), [Iyer, S.S.](#),
Technol. Group, IBM Syst., Hopewell Junction, NY, USA

This paper appears in: **Solid-State Circuits, IEEE Journal of**

Publication Date: June 2005

Volume: 40, Issue: 6

On page(s): 1377 - 1387

ISSN: 0018-9200

INSPEC Accession Number: 8459799

Digital Object Identifier: 10.1109/JSSC.2005.848019

Posted online: 2005-06-13 13:09:05.0

Abstract

An 800-MHz embedded DRAM macro employs a memory cell utilizing a device from the 90-nm high-performance technology menu: a 2.2-nm gate oxide 1.5 V IO device. A concurrent refresh mode is designed to improve the memory utilization to over 99% for a 64 /spl mu/s data retention time. A concurrent refresh scheduler utilizes up-count and down-count registers to identify at least one array to be refreshed at every clock cycle, emulating a classical distributed refresh mode. A command multiplier employs low frequency phased clock signals to generate the clock, commands, and addresses at rates up to 4/spl times/ that of the tester frequency. The macro integrates masked redundancy allocation logic during at speed multibank test. The hardware results show a 312-MHz random access frequency and 800-MHz multibank frequency at 1.2 V, respectively.

[Index Terms](#)

[Inspe](#)

Controlled Indexing

[DRAM chips](#) [UHF integrated circuits](#) [multiplying circuits](#) [nanoelectronics](#) [shift registers](#)

Non-controlled Indexing

[1.2 V](#) [1.5 V](#) [2.2 nm](#) [312 MHz](#) [800 MHz](#) [90 nm](#) [command multiplier](#) [concurrent refresh mode](#) [concurrent refresh scheduler](#) [down-count registers](#) [embedded DRAM](#) [high-performance cell](#) [low frequency phased clock signals](#) [masked redundancy allocation logic](#)

[memory cell](#) [random access frequency](#) [speed multibank test](#) [up-count registers](#)

Author Keywords

[Command multiplier](#) [concurrent refresh mode](#) [embedded DRAM](#) [high-performance cell](#) [refresh scheduler](#)

References

- 1 T. Kirihata, G. Mueller, B. Ji, G. Frankowsky, J. M. Ross, H. Terletzki, D. G. Netis, O. Weinfurter, D. R. Hanson, G. Daniel, L. L.-C. Hsu, D. W. Storka, A. M. Reith, M. A. Hug, K. P. Guay, M. Seiz, P. Poehnmüller, H. Hoenigschmid, and M. R. Wordeman, "A 390 μm^2 , 16-bank, 1 Gb DDR SDRAM with hybrid bitline architecture," *J. Solid-State Circuits*, vol. 34, no. 11, pp. 1580-1588, Nov. 1999.
[Abstract | Full Text: PDF \(628KB\)](#)
- 2 J. Dreibelis, J. Barth, R. Kho, and H. Kaiter, "Processor-based built-in self-test for embedded DRAM," *J. Solid-State Circuits*, vol. 33, no. 11, pp. 173-1740, Nov. 1998.
[Abstract | Full Text: PDF \(288KB\)](#)
- 3 T. Shimizu, J. Korematsu, M. Satou, H. Kondo, S. Iwata, K. Okumura, K. Ishimi, Y. Nakamoto, M. Kumano, K. Dosaka, A. Yamazaki, Y. Ajioka, H. Tsubota, Y. Nunomura, T. Ueabe, J. Hinata, and K. Saitoh, "A multimedea 32 b RISC microprocessor with 16 Mb DRAM," in *IEEE/ISSCC Dig. Tech. Papers*, 1996, pp. 216-217.
[Abstract | Full Text: PDF \(1152KB\)](#)
- 4 H. Pilo, D. Anand, J. Barth, S. Burns, P. Corson, J. Covino, and S. Lamphier, "A 5.6-ns random cycle 144-Mb DRAM with 1.4 Gb/s/pin and DDR3-SRAM interface," *J. Solid-State Circuits*, vol. 38, no. 11, pp. 1974-1980, Nov. 2003.
[Abstract | Full Text: PDF \(1162KB\)](#)
- 5 H. Sakakibara, M. Nakayama, M. Kusunoki, K. Kurita, H. Otori, M. Hasegawa, S. Iwahashi, K. Higeta, T. Hanashima, H. Hayashi, K. Kuchimachi, K. Uehara, T. Nishiyama, M. Kume, K. Miyamoto, and E. Kamada, "A 750 MHz 144 Mb cache DRAM LSI with speed scalable design and programmable at speed function-array BIST," in *IEEE/ISSCC Dig. Tech. Papers*, 2003, pp. 458-459.
[Abstract | Full Text: PDF \(963KB\)](#)
- 6 T. Kimura, K. Takeda, Y. Aimoto, N. Nakamura, T. Iwasaki, Y. Nakazawa, H. Toyoshima, M. Hamada, M. Togo, H. Nobusawa, and T. Tanigawa, "64 Mb 6.8 ns random ROW access DRAM macro for ASICs," in *IEEE/ISSCC Dig. Tech. Papers*, 1999, pp. 416-417.
[Abstract | Full Text: PDF \(260KB\)](#)
- 7 P. DeMone, M. Dunn, D. Haerte, J.-K. Kim, D. Macdonald, P. Nyasulu, D. Perry, S. Smith, T. Wojcicki, and Z. Zhang, "A 6.25 ns random access 0.25 μm embedded DRAM," in *Symp. VLSI Circuits Dig. Tech. Papers*, 2001, pp. 237-240.
[Abstract | Full Text: PDF \(380KB\)](#)
- 8 K. Kuroki, A. Okuda, Tsuyoshikunishi, T. Katsuhisa, M. Fujita, and I. Nariake, *Develop of Embedded DRAM Macro Based on 0.13 μm CMOS Logic Process Technology for High Performance Applications*. IEICE, Tech. Rep. ICD2002-3(2002-4), pp. 13-18.
- 9 F. Morishita, I. Hayashi, H. Matsuoka, K. Takahashi, K. Shigeta, T. Gyohten, M. Niino, M. Okamoto, A. Hachisuka, K. Dosaka, and K. Aimoto, "A 312 MHz 16 Mb random-cycle embedded DRAM macro with 73 mW power-down mode for mobile applications," in *IEEE/ISSCC Dig. Tech. Papers*, 2004, pp. 202-203.

[Abstract](#) | [Full Text: PDF \(729KB\)](#)

- ¹⁰ C.-L. Hwang, T. Kirihata, M. Wordeman, J. Fifield, D. Storaska, D. Pontius, G. Fredeman, B. Ji, S. Tomashot, and S. Dhong, "A 2.9 ns random access cycle embedded DRAM with a destructive-read architecture," in *Symp. VLSI Circuits Dig. Tech. Papers*, 2002, pp. 174-175.

[Abstract](#) | [Full Text: PDF \(269KB\)](#)

- ¹¹ J. Barth, D. Anand, J. Dreibelis, and E. Nelson, "A 300 MHz multibanked eDRAM macro featuring GND sense, bit-line twisting and direct reference cell write," in *IEEE ISSCC Dig. Tech. Papers*, 2002, pp. 156-157.

[Abstract](#) | [Full Text: PDF \(393KB\)](#)

- ¹² J. Barth, D. Anand, J. Dreibelis, J. Fifield, K. Gorman, M. Nelms, G. Pomichter, and D. Pontius, "A 500 Mhz multibanked compleable DRAM macro with direct write and programmable pipeline," in *IEEE ISSCC Dig. Tech. Papers*, 2004, pp. 204-205.

[Abstract](#) | [Full Text: PDF \(799KB\)](#)

- ¹³ O. Takahashi, S. H. Dhong, M. Ohkubo, S. Onishi, R. H. Dennard, R. Hannon, S. Crowder, S. S. Iyer, M. R. Wordeman, B. Davari, W. B. Weinberger, and N. Aoki, "1 GHz fully pipelined 3.7 ns address access time 8 K \$times\$ 1024 embedded DRAM macro," *J. Solid-State Circuits*, vol. 35, no. 11, pp. 1673-1679, Nov. 2000.

[Abstract](#) | [Full Text: PDF \(180KB\)](#)

- ¹⁴ T. Kirihata, P. Paries, D. Hanson, H. Kim, J. Golz, G. Fredeman, R. Rajeevakumar, J. Griesemer, N. Robson, A. Cestero, M. Wordeman, and S. Iyer, "An 800 MHz embedded DRAM with a concurrent refresh mode," in *IEEE ISSCC Dig. Tech. Papers*, 2004, pp. 206-207.

[Abstract](#) | [Full Text: PDF \(769KB\)](#)

- ¹⁵ G. Wang, P. Paries, B. Khan, J. Liu, Y. Olani, J. Norum, N. Robson, T. Kirihata, and S. Iyer, "A \$0.168\mu\text{m}^2\$ 90/65-nm logic applications," presented at the *IEEE Int. Symp. VLSI Technology, Systems, and Applications* Hsinchu, Taiwan, Apr. 2005.

[Buy Via Ask!IEEE](#)

- ¹⁶ T. Namekawa, S. Miyano, R. Fukuda, R. Haga, O. Wada, H. Banba, S. Takeda, K. Suda, K. Mimoto, S. Yamaguchi, T. Ohkubo, H. Takato, and K. Numata, "Dynamically shift-switched dataline redundancy suitable for DRAM macro with wide data bus," *J. Solid-State Circuits*, vol. 35, no. 5, pp. 705-712, May 2000.

[Abstract](#) | [Full Text: PDF \(440KB\)](#)

- ¹⁷ C. Kothandaraman, S. K. Iyer, and S. S. Iyer, "Electrically Programmable Fuse (eFUSE) using electromigration in silicides," *IEEE Electron Device Lett.*, vol. 23, no. 9, pp. 523-525, Sep. 2002.

[Abstract](#) | [Full Text: PDF \(356KB\)](#)

Citing Documents

No citing documents available on IEEE Xplore.